



Western University
Faculty of Engineering
Student Shop Guidelines

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Introduction:

Western Engineering (WE) strives to offer our students the best possible hands-on experience. WE achieve this through thorough up-front shop training followed by graduated access to machinery and resources on a per student basis.

MORE EXPERIENCE = MORE ACCESS

Open and honest communication in all regards is the key to the success of this program. Many students and groups rely on these resources. All shop users are expected to use these resources in accordance with training and ensure that all deficiencies, errors, incidents and accidents are reported immediately to the Student Shop Manager. It is our promise that no report will be met with discipline if training protocols are adhered to. The purpose of reporting is not only required by law but to ensure training is adequate and effective and to guarantee quickest resolution of all issues so that all users will maintain access to the best equipment possible.

This document is to provide a clear and simple overview of student shop use within Western Engineering.

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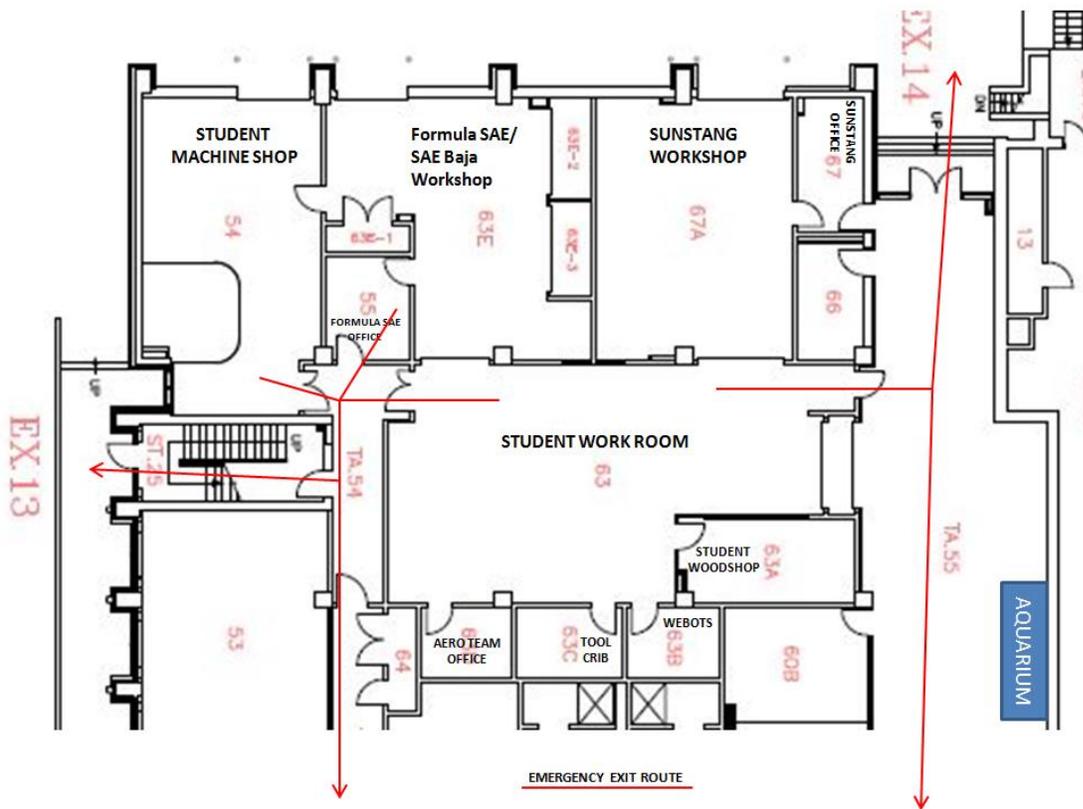
Outline of Shop Spaces:

Student shops refer to all shops open to or that contain resources available to all students within the faculty of Engineering such as:

Shop Spaces: See figure A

- CMLP 54 – Student Machine Shop
- CMLP 55 - Formula SAE Office
- CMLP 63 – Student Work Room
- CMLP 63A – Student Woodshop
- CMLP 63B - WEBots Room
- CMLP 63C – Common Tool Crib/Storage Room
- CMLP 63D - Western Aero Team Office/Work room
- CMLP 63E - Formula SAE/SAE Baja Shop
- CMLP 67 - Sunstang office
- CMLP 67A - Sunstang shop
- CMLP 1301 – Support Technician’s Office
- CMLP 1329 - Baja SAE Office

Figure A: CMLP Student Shops Floor plan



Shop Hours:

Academic season: Monday – Friday 8:00am – 10:00pm

Summer Hours: Monday – Friday – 8:00am – 4:30pm

Extended use: 8:00am – Midnight, seven days/week: is offered to individuals on teams for team related projects only. Scholastic projects are not permitted during extended hours in an effort to remain fair to all shop users.

Shop Use:

Shop use is strictly reserved for school related work only. Personal projects of any kind are not permitted in the student shops.

Shop Resources and Tools:

- Hand Tools – Basic hand tools – CMLP 54, 63 and 63C
- Stationary Power Tools
 - Horizontal Wood Band Saw – CMLP 63A
 - Horizontal Metal Band Saw – CMLP 54
 - Vertical Metal Band Saw – CMLP 54
 - Belt and Disc Sanding Machines (3) - CMLP 54(2), CMLP 63A(1)
 - Drill Press (2) - CMLP 54
 - Sliding Compound Miter Saw – CMLP 63A
- Machine Tools
 - Conventional Machine Lathe (2) – CMLP 54
 - Conventional Milling Machine – CMLP 54
 - CNC Milling Machine – CMLP 54
- Welding Equipment
 - TIG Welder – CMLP 54
 - MIG Welder – CMLP 54
 - Enclosed Welding area with fume extraction – CMLP 54
- Other tools
 - Arbor press (1 ton)
 - Work Benches
 - Bench Vises
 - Misc. Power tools – Available by sign-out (additional training required)
 - Cordless Drills
 - Power Drills
 - Jig Saw
 - Circular Saw
 - Reciprocating Saw
 - Angle Grinder
- Storage
 - Lockers are available by sign-out
 - Standard locks are provided
 - Storage of dangerous goods is prohibited

Technical Support and Costs:

Technical Support is available through technicians and UMS staff. Support and training is funded through the faculty at the undergraduate level. Training and support at the graduate levels is billed on a time and material basis at standard UMS shop rates or on a per session rate of \$25.00 per session. In all cases shop users are expected to cover the cost of their own consumables such as cutters, bits, finishing materials (sand paper), etc. These consumables are available within the student shop from the attendant/technician or through UMS.

Shop Rules and Protocols

All users of the Engineering Student shops must prove adequate training has been completed. Adequate training refers to Engineering Internal Shop training or relevant Government issued trade certificate. In any case, all users must complete training on Western's specific safety protocols and procedures.

Safety Protocols:

All safety protocols presented in training must be adhered to. It is unlawful to ignore a dangerous situation. All safety concerns must be brought to the attention of a technician. Possible methods include: Verbal, electronic or posting of visible/legible signage. I.e: *Out of Order*

Shop Rules:

- All users must have adequate training
- Report all safety concerns to a supervising technician
- No user shall work alone in any work space
- No horseplay, contents or feats of strength permitted
- Personal Protective Equipment (PPE) is required
 - Safety glasses must be worn at all times
 - Long pants must be worn in all shops, labs and workspaces
 - Appropriate footwear must be worn in all workshop areas
 - Closed toe shoes in all cases – No flip flops or open toe shoes
 - Certified steel toe shoes or approved slip on safety toe caps must be worn in CMLP 54 (machine shop) at all time and in all other areas whenever a foot hazard is present
 - Additional PPE must be used as required by the situation
 - Additional PPE must be available for all users present

Housekeeping Rules

- All resources will be in as good or better condition than when found by each user
- All tools and work areas must be clean and tidy at all times
 - No mess will be left overnight
 - Untidy working conditions will be met with a “stop work” order until the area has been tidied up
- No tools will be removed from any work area
- All tools must be returned to original location after each use
- All materials brought into the space must be removed – Do not leave scraps behind
- All materials left in the shop must be labeled and dated otherwise they could be disposed of
- All machinery must be cleaned after each use in accordance with “Machine Tool Care.doc”

Rule Violations:

Rule violations will be dealt with on a per instance basis. Penalties may include but are not limited to removal of shop privileges depending on severity and are up to the discretion of the Student Shop Manager and/or other designate including but not limited to Associate Deans where required. In instances where Extended Use agreements are in place, penalties may extend to the associated team depending on the seriousness of the violation.

Standard Operating Procedures (SOP's)

Standard operation procedures exist for all tools and common practices found in the student shops. An SOP may be requested for any process or tool by contacting the Student Shop Manager.

Shop Safety Training: Levels

All shop users must complete Western Engineering Shop Safety Training. Shop Safety Training exists on different levels:

- **Introduction to Wood and Metal Shop Training - Theory** – Allows access to work room (CMLP63), No use of power tools
 - Includes 4 OWL presentations, a series of videos and completion of 4 quizzes
 - Students can then produce a “Certificate of Completion”. with which students can proceed to hands-on training once signed up.
 - All users must be recertified each calendar year. - Quizzes only
 - This training is provided on-line through OWL: <https://owl.uwo.ca/portal/site/bedfc63d-36dc-4849-9a63-37d80d978ffa>
- **Introduction to Wood and Metal Shop Training – Hands-on**
 - (must present certificate at this session before being able to start)
 - You must sign up for a session in advance. Eligible participants will be notified through OWL after completing the on-line OWL training. Sessions will be communicated to teams and clubs
 - Upon completion, students will have shop access to stationary power equipment like band saws, grinders, sanders and drill presses
- **Advanced Machine tool Training – Theory and Lab(s)**
 - 1, 2 hour presentation
 - 1, 2 hour lab session to complete Milling machine project. Can be expanded to a total of approximately 5 hours to complete the project of a gaming die
 - Upon completion, students will be able to plan and describe further work using a process sheet from which the supporting technician will be able provide further training and advice so the students can complete their process.
- **Welding Training:**
 - 1 hour presentation – Soon to be on OWL
 - Hands on practice sessions as requested – students are strongly encouraged to practice prior to working on any actual projects
- **Additional training and support:**
 - is available to all students and teams
 - Undergraduate Support offered at no cost at all times throughout the year
 - Graduate support is offered at standard UMS shop rates

Material and Chemical Safety:

All student and staff must have up to date WHMIS training before working in the shops. Use of any material and/or chemical must be in accordance with WHMIS Guidelines. Users must be familiar with MSDS/SDS forms for each material. Materials/Chemicals include raw materials, cutting fluids and tool materials such as abrasives (for example).

MSDS/SDS forms for material found within the shops are available in the (yellow) MSDS binders found in CMLP 63 and outside of CMLP54 as well as on the Engineering Shop Training OWL site.

Fume and Dust extraction is provided in several areas throughout the student shops. They include but are not limited to:

- Ductless fume hood (charcoal filters – CMLP 63 Student Workroom)
- Dust extractor (wood/plastic dust only) – CMLP 63A Student Woodshop
- Metal dust/Welding Extractor – CMLP 54 – Student Machine Shop
- Fume Extraction – CMLP 67A – Sunstang Workroom

In areas where built in extraction is not available, industrial vacuums are supplied. Two different configurations are provided.

- Wet/Dry – for machining clean-up/control
- Dry only – for dusts and debris which are not damp, moist or wet.

Standard Forms:

Standard forms are available for many common tasks and work requests. Students wishing to perform machine tool work can access these documents through the Engineering Shop Training OWL site under Additional Resources. Examples of these document appear later in this book. These forms include:

- Standard/Safe Operation Procedures (SOP's)
 - For common processes
- Machine Tool Care.doc
 - Cleaning up
- Machine Tool Use Procedure.doc
 - How to access equipment
- Machine Use Process Sheet.xls
 - Tracking sheet for additional training and processes
- Welding Machine Use Procedure.doc
 - How to access welding equipment
- Welding Machine Use Process.doc
 - Tracking sheet for additional training and processes
- Speeds and Feeds Chart
 - For Cutting of all materials – tips and hints
- Material and Process Hints
 - Additional information about common materials, techniques and processes

Additional Support and Training

Technical Support:

Technicians are available Monday to Friday during regular business hours for support and training. Additional support is available through University Machine Services (UMS) located in Room 50 of the Thompson Engineering Building.

Purchasing Support:

For purchasing project related good not commonly available through local retail, Engineering Financial Stores (EFS) is available. EFS is located in Room 40 of the Thompson Engineering Building.